

WHAT IS CLAIMED IS:

1. A battery operated self-contained submersible liquid dispenser for dispensing discrete quantities of a liquid from a remote liquid reservoir, the dispenser comprising a hermetically sealed walled housing containing therein a peristaltic pump driven either directly or via a speed reduction gear train by an electric motor in response to motor activation signals received from an electric control circuit within the housing, the pump including a flexible liquid dispensing tube connected to respective liquid inlet and liquid outlet ports extending through the wall of the housing, a pump actuator for forcing liquid received via the liquid inlet port through the tube to the outlet port, and a sensor on or in the wall of the housing connected to the circuit, the sensor being adapted to sense a changed condition from a required parameter external to the housing, the circuit thereafter activating the motor and hence the pump to dispense a discrete quantity of the liquid.

2. A dispenser according to Claim 1, wherein the sensor comprises a pair of electrodes and the changed condition comprises a change in electrical resistivity between the electrodes.

3. A dispenser according to claim 1, wherein the sensor comprises a pair of electrodes and the changed condition comprises detecting the presence or absence of water between the electrodes.

4. A dispenser according to claim 3, mounted at a pre-selected location within a cistern of a toilet wherein the sensor is adapted to detect the presence or absence of water within the cistern such that when the cistern is full, the sensor detects the presence of water within the cistern or when the toilet is flushed thereby

emptying the cistern, the sensor detects the absence of water within the cistern.

5. A dispenser according to Claim 1, wherein the microprocessor is programmable by means of an external signal.

6. A dispenser according to claim 5, wherein the microprocessor is programmed via a keyboard mounted on or in the wall of the housing and connected to the microprocessor.

7. A dispenser according to Claim 1, wherein the microprocessor further comprises a timer circuit for activating the motor and hence the pump for a preset duration corresponding to a required rate and hence a pre-selected quantity of the liquid to be dispensed.

8. A dispenser according to Claim 1, wherein the actuator comprises a spoked wheel having a plurality of radially disposed spokes each having a free end and driven either directly or indirectly via the motor, the free ends of a respective adjacent pair of spokes being adapted to bear directly or indirectly onto a pre-determined section of the tube to thereby trap therebetween a bolus of liquid to be dispensed via the outlet port, the spokes being further adapted to push the bolus progressively through the tube and out of the outlet port as the wheel rotates in response to the urging of the motor.

9. A dispenser according to Claim 1, wherein the actuator comprises a spoked wheel having a plurality of radially disposed spokes each having a free end and driven either directly or indirectly via the motor, the free ends of a respective adjacent pair of spokes being adapted to bear directly or indirectly onto a pre-determined section of the tube to thereby trap there between a bolus of liquid to be dispensed via the outlet port and the spokes being further adapted to push the bolus

progressively through the tube and out of the outlet port as the wheel rotates in response to the urging of the motor, and whereas the end of each spoke further includes a roller so as to minimize wear and tear on the outside of the tube in this region and to reduce friction, the rollers "pinching" the walls of the tube flat as they roll over the tube.

10. A dispenser according to Claim 1, programmed to dispense a preselected quantity of the liquid repeatedly at timed intervals, subject to the condition sensed by the sensor indicating a required parameter.

11. A dispenser according to claim 1, wherein the condition sensed by the sensor is the presence or absence of a fluid having a pre-determined characteristic.

12. A dispenser according to claim 11, wherein the fluid is water.

13. A dispenser according to claim 12, wherein the fluid is water and the predetermined characteristic is selected from the group consisting of a desired pH, a desired electrolyte content, a desired chlorine content, and an undesirable pathogen.

14. The dispenser according to claim 12, wherein the fluid is air and the predetermined characteristic is a desired humidity.

15. A dispenser according to Claim 1, wherein the control circuit is pre-programmed during manufacture to perform required tasks and the battery is built into the housing before it is hermetically sealed, thereby making the dispenser relatively cheap to make such that it may simply be a disposable item once the battery has been exhausted.

16. A dispenser according to claim 1, further comprising means for preventing backflow of the liquid within the tube such that entry of a fluid at the outlet port is substantially prevented.

17. The dispenser according to claim 16, wherein the means for preventing backflow of the liquid within the tube comprises configuration of the speed reduction gear train to permit rotation of the pump actuator in a single direction.

18. The dispenser according to claim 17, wherein the speed reduction gear train comprises a drive shaft connected to the motor, a first worm gear connected to the drive shaft to drive a first spur gear mounted for rotation with a second worm gear in mesh with a second spur gear mounted for rotation with the pump actuator, such that rotation of the actuator is effectively permitted to occur in a single direction.